

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously presented) A method of optimizing production from a formation without creating undue risk of mechanical instability of the formation, comprising:

establishing a stability envelope on a processor-based control system and programming a desired region of operation within the stability envelope;

sensing a bottom hole flowing pressure;

comparing the bottom hole flowing pressure to the stability envelope for the formation;

adjusting fluid production to maintain the bottom hole flowing pressure within the desired region of the stability envelope; and

adjusting a sensor sampling rate as a function of the position of the bottom hole flowing pressure in the stability envelope.

2. (Canceled)
3. (Original) The method as recited in claim 1, wherein sensing comprises sensing the bottom hole flowing pressure repeatedly and periodically.
4. (Previously presented) The method as recited in claim 1, wherein comparing comprises utilizing the processor-based control system to automatically adjust fluid production based on the bottom hole flowing pressure.

5. (Original) The method as recited in claim 1, wherein adjusting comprises adjusting a valve to change the fluid production rate.
6. (Original) The method as recited in claim 1, wherein adjusting comprises adjusting a choke to change the fluid production rate.
7. (Original) The system as recited in claim 1, wherein adjusting comprises adjusting an artificial lift mechanism to change the fluid production rate.
8. (Currently amended) A method of optimizing production from a formation, comprising:

comparing a bottom hole flowing pressure to a reservoir pressure in real-time to determine an underbalance as a fluid is produced from the formation; and

continuously adjusting the bottom hole flowing pressure to maintain the level of underbalance at less than the maximum underbalance and in proximity to a predetermined ~~maximum~~ underbalance for a measured reservoir pressure that prevents mechanical instability of the formation.
9. (Original) The method as recited in claim 8, wherein comparing comprises continuously sensing the bottom hole flowing pressure and the measured reservoir pressure.
10. (Previously presented) The method as recited in claim 8, wherein comparing comprises periodically sensing the bottom hole flowing pressure.
11. (Original) The method as recited in claim 9, wherein continuously sensing comprises using a downhole pressure sensor to determine the bottom hole flowing pressure.
12. (Original) The method as recited in claim 8, wherein continuously adjusting comprises automatically adjusting the production flow rate of the fluid.

13. (Original) The method as recited in claim 12, wherein adjusting the production flow rate comprises adjusting a valve.
14. (Original) The method as recited in claim 12, wherein adjusting the production flow rate comprises adjusting a choke.
15. (Original) The method as recited in claim 12, wherein adjusting the production flow rate comprises adjusting an artificial lift mechanism.
16. (Currently amended) A system for optimizing production from a formation, comprising:

a completion deployed in a wellbore, the completion having a flow control mechanism able to control the rate at which a fluid is produced through the wellbore;

a reservoir pressure sensor;

a bottom hole flowing pressure sensor; and

a stability envelope for the formation, wherein the flow control mechanism is adjustable to continuously adjust the ratio of bottom hole flowing pressure to reservoir pressure within the stability envelope to maintain a level of underbalance at less than a maximum underbalance and in proximity to a predetermined optimal underbalance able to prevent mechanical instability of the formation.

17. (Original) The system as recited in claim 16, wherein the flow control mechanism comprises an artificial lift mechanism.
18. (Original) The system as recited in claim 16, further comprising a computerized controller to receive signals from the reservoir pressure sensor and the bottom hole flowing pressure sensor and to automatically adjust the flow control mechanism based on the signals received.

19. (Original) The system as recited in claim 16, wherein the flow control mechanism comprises a valve.
20. (Original) The system as recited in claim 17, wherein the flow control mechanism comprises a choke.
21. (Original) The system as recited in claim 16, further comprising a control system to compare the reservoir pressure and the bottom hole flowing pressure to the stability envelope and to automatically adjust the bottom hole flowing pressure.
22. (Currently amended) A method of optimizing production of a fluid from a formation without incurring sanding due to mechanical instability of the formation, comprising:
- monitoring in real-time a reservoir pressure of the formation and a bottom hole flowing pressure proximate a production completion; ~~and~~
- periodically adjusting the ratio of bottom hole flowing pressure to reservoir pressure to maintain the ratio at a desired position relative to a predetermined line representative of the maximum pressure ratio underbalance for the formation; and
- adjusting a sensor sampling rate as a function of the ratio of bottom hole flowing pressure to reservoir pressure.
23. (Original) The method as recited in claim 22, wherein monitoring comprises utilizing a downhole pressure sensor.
24. (Original) The method as recited in claim 22, further comprising deploying a completion in a wellbore to control production of the fluid.

25. (Original) The method as recited in claim 24, wherein deploying comprises suspending the completion on a tubing through which the fluid is produced.
26. (Original) The method as recited in claim 22, wherein deploying comprises deploying a completion having a flow control mechanism adjustable to control a production rate and the bottom hole flowing pressure.
27. (Original) The method as recited in claim 22, wherein periodically adjusting comprises automatically adjusting the bottom hole flowing pressure.
28. (Canceled)
29. (Canceled)
30. (Canceled)
31. (Canceled)